Alberta's THREATENED Wildlife

Peregrine Falcon

This spectacular bird is an endangered species in Canada — a comprehensive management program is now underway to ensure its survival

Alberta
FORESTRY, LANDS
AND WILDLIFE

PEREGRINE FALCON

Status

Peregrine Falcons are an endangered species in Canada. In addition, the Policy for the Management of Threatened Wildlife lists them as **endangered** in Alberta. Without active management, this species may become extinct in the province within the next ten years.

Peregrine Falcons were commonly found throughout the world. They have been prized and admired for their speed, grace and beauty by falconers and others for over 3000 years. In North America, breeding pairs were once found from the Pacific east to the Atlantic and the United States/Mexico border north to the arctic. Only Newfoundland and a few islands in the high arctic (for example, Ellesmere Island) did not have breeding populations of peregrines.

In the mid 1900s, a dramatic drop in the number of Peregrine Falcons was noted worldwide, particularly in Europe and North America. At least 300 known nesting sites in the eastern United States were abandoned and the birds had almost disappeared from Alberta. By 1970, breeding pairs along the North and South Saskatchewan rivers were gone and there was only one known pair nesting in Canada south of the Northwest Territories (they nested on the Bow River in southern Alberta). In 1971, during efforts to find breeding birds in Alberta, a small population was found in the Peace/Athabasca delta region and along Lake Athabasca in northeastern Alberta.

Peregrine Falcons are not protected by federal legislation. The Migratory Birds Convention Act, an international agreement to protect migrating species, does not include birds of prey. However, provincial and territorial regulations protect peregrines. In 1987 this species was listed as an **"Endangered Animal"** within the provincial Wildlife Act and its Regulations. All animals listed as such are fully protected by law year round, as are their nests or dens. A National Peregrine Falcon Recovery Plan has set goals and objectives to oversee the continued protection of the species in various regions of Canada.

There are three subspecies of Peregrine Falcons in Canada but only one, the *anatum* peregrine, breeds in Alberta. This also is the only subspecies that is endangered in Canada and the information in this pamphlet will focus on the *anatum* subspecies. Their estimated breeding population in the mid 1980s was 60 to 70 pairs in central and southern Yukon Territory, 40 pairs in the Porcupine River basin, 25 pairs in the Mackenzie River basin, 6 to 9 pairs in northern Alberta, one pair in each Edmonton and Calgary, and a few pairs (probably less than 5) in interior British Columbia.

Description

Falcons have a number of characteristics that separate them from other birds of prey. They are slim birds with a small head and long, thin, pointed wings that almost reach the tip of the tail when the birds are at rest. In flight, the falcons hold their wings slightly bent at the wrist as they fly with shallow, rapid wingbeats. All falcons have a small tooth-like projection behind the hooked tip of the upper bill.

The main feature used to identify Peregrine Falcons is the black or dark grey crown, nape, and cheek strip (or moustache) below the eye. The dark feathers on the head look like a hood with chinstraps and can be seen easily at a distance.

Adult peregrines have a dark blue/grey back, rump, and upper surface of the wings. The throat is white and blends into pale underparts horizontally streaked with dark black-brown bars on the sides and thighs. The underwing is white barred with black. The tail is barred with dark bands and a whitish tip. Anatum peregrines are noted for rich, buffy salmon streaks on the breast, heavy black cheek patches, and a dark face. Both sexes are alike in their colour. Peregrines are similar in size to crows but adult females are slightly larger than males.

Crow

Falcon

Immature Peregrine Falcons generally are brown where the adults are blue/grey. The underparts are heavily streaked vertically with black and brown. The tail is dark brown with narrow pale brown bars or spots. The underside of the tail is tipped with buffy white.

Peregrine Falcons are most similar to Prairie Falcons. The two species are about the same size but peregrines are much darker above and lack the dark patch at the base of the underwing seen in flying Prairie Falcons. Immature peregrines are much more heavily streaked than Prairie Falcons.

The Peregrine Falcon is often confused with other common species of birds. Gulls, pigeons and crows are mistaken for peregrines, particularly when they are seen flying overhead or perched at a distance. A close examination of most of these birds will reveal that

they have a more 'chunky' body shape and erratic flying style than the peregrine.

The Merlin (pigeon hawk) is another falcon species which commonly nests in urban areas. As a falcon, their shape and flying style are similar to Peregrines, so size and behavior must be used to distinguish between them. The Merlin is a much smaller bird than the Peregrine. While the adult male is similar in colouration to the adult peregrine, adult female and immature merlins are predominately brown. The Merlin is typically found nesting in spruce trees along river valleys, residential areas and cemetaries. In these areas they often utilize old crow or magpie nests rather than the cliffs or building ledges used by peregrines.

Habits

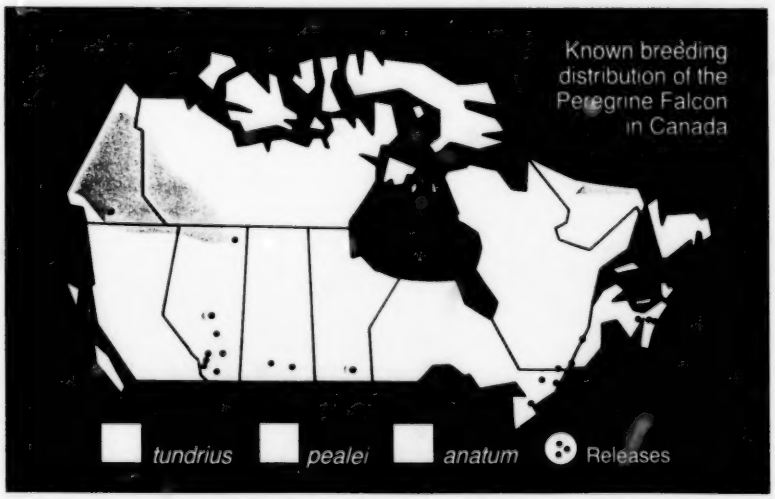
Peregrine Falcons are noted for their speed and are perhaps the fastest bird of prey. They fly with short, quick, powerful strokes and can reach speeds close to 320 kph (200 mph) in a downward dive! Their long, thin wings also are well adapted for long-range flight. Peregrines that nest in the high arctic usually overwinter in central and southern South America.

Peregrines use their speed and agility well to catch live birds, their main food item. Most of the birds killed by peregrines are struck in mid-air, usually from above; however, they occasionally catch prey in direct chases in open areas. When the falcon strikes from above, it climbs high, spots a prey bird, and dives at it. During the dive, the peregrine holds its feet back against its tail and its wings half-closed. This streamlined shape allows the falcon to reach extremely high speeds.

The success of the hunt depends on the experience and ability of the falcon versus the experience and ability of the prey. The presence of escape cover for the prey bird only helps if the bird is being chased. Most prey are killed instantly when struck by a peregrine. Small birds are grasped in the falcon's talons and carried to a perch. Larger birds are dropped to the ground where the peregrine will land and tear them apart. Peregrine Falcons usually hunt along shorelines, river valleys, and over marshes at dawn and dusk (crepuscular). Animals that are most active at dusk and dawn are called crepuscular.

As indicated earlier, most Peregrine Falcons migrate over long distances. Breeding birds in northern Alberta probably winter in costal areas along the Gulf of Mexico south into South America. They migrate north through the Beaverhill Lake region, in mid or late April. Adult birds usually arrive before immatures. They all return southwards in late September and early October.

Non-breeding birds also migrate northwards in the spring and return to the same general area where they hatched. They usually do not defend specific areas but occasionally use short-term territories. Non-breeding birds often wander throughout the summer.



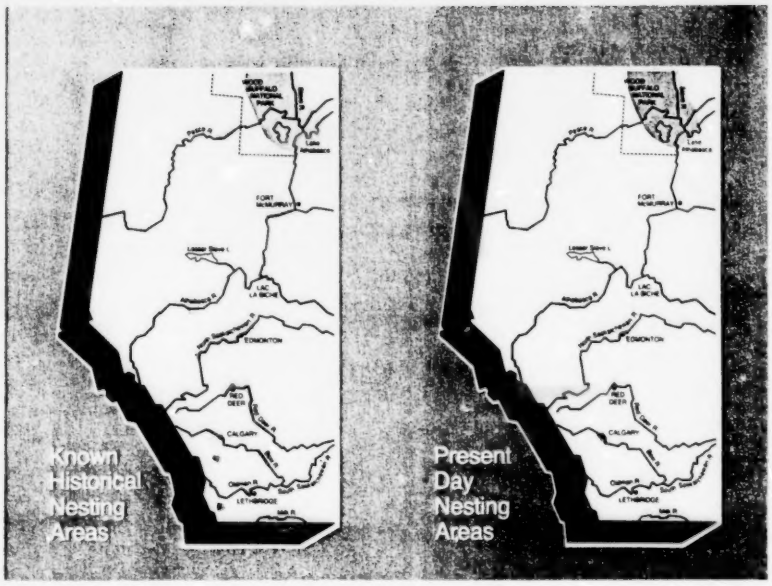
Reproduction

Peregrine Falcons in Alberta nest near rivers, streams, and marshes in areas undisturbed by humans. The nests are located on ledges on the steep face of rock or clay cliffs where they are protected from most predators and perhaps, the weather. The ledge must be large enough to hold an adult and up to four growing birds. A few birds raised in captivity have successfully used ledges on high office towers and bridges in downtown urban areas instead of the steep cliffs.

Adult Peregrine Falcons do not really build a nest. They simply scrape out a shallow bowl-shaped area in loose soil, sand, or gravel on the ledge at the nesting site. No other nest materials are added and the eggs are laid in the dirt. Each breeding pair may have a number of alternate nest sites but uses only one each year.

Falcons return to the breeding area in northern Alberta in late April and early May. In many cases, the males arrive first and immediately start to defend a territory. The females arrive soon after. Breeding pairs may stay together from year to year but a new mate is accepted readily if one of the pair dies. Female Peregrine Falcons usually do not breed until at least two years old and may live up to 20 years in the wild.

Each breeding pair of peregrines shows elaborate pre-breeding



behavior that includes hunting together and feeding each other. The males fly complex courtship flights that show off their speed and maneuverability. The timing of these activities depends largely on the spring weather but generally they last about one week.

In mid-May breeding females usually lay four eggs heavily marked with dark red/brown. If the eggs are lost early in the season, the female readily produces a second clutch or set of eggs. However, there are usually fewer eggs. Although both adults are involved in incubating the eggs for about 33 days, the work load is not shared evenly: the female does most of the incubating and the male catches and brings food to her.

In mid-June, the eggs hatch. Newly-hatched young are quite helpless and depend on the adults to protect them from the weather. The chicks also have a coat of creamy white down that helps protect them for the next four weeks. It is slowly replaced by their juvenal feathers and young peregrines begin to fly (fledge) at 40 to 45 days.

There is a high mortality of young peregrines in their first year. In Alberta, the normal clutch size is four eggs, often only two or three of those hatch and less than two chicks from each nest survive to fledge. Young birds are unaware of danger as well as inexpereienced at flying and hunting. As a result over 60% of fledged birds die before the next spring.

Food

Adult Peregrine Falcons are specialized to capture a variety of live birds. The prey birds may range in size from small perching birds such as sparrows or warblers to larger waterfowl such as ducks. Peregrines are most successful at capturing and killing such moderately-sized birds as swallows, sandpipers, terns, flickers, woodpeckers, and nighthawks. In northern Alberta, the peregrines often take gulls, ducks, and a few muskrats. Migrating falcons at Beaverhill Lake kill and eat various waterfowl and shorebirds.

Once their prey is dead, Peregrine Falcons strip away most of the feathers and then tear off the meat. Small animals may be carried to the nesting site, pulled apart, and fed to the young birds in small pieces. In addition, the adults may use food to lure the chicks from the nest as they learn to fly. Newly-fledged birds are awkward flyers and must learn grace, speed, and hunting methods.

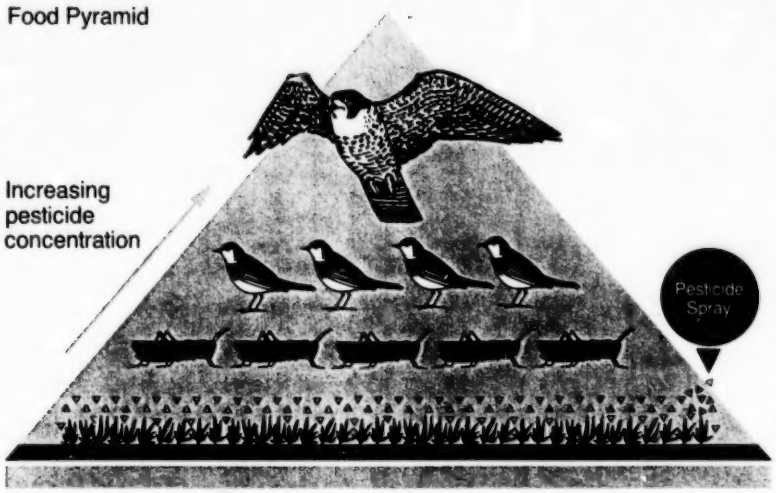
Limiting Factors

The worldwide decline in Peregrine Falcons was related directly to the agricultural and industrial use of pesticides and chemicals. Harmful residues (what is left after the chemicals breakdown in the environment or in an animal's body) have been found in adult birds, eggs and dead young found in the nest.

Pesticides such as DDT, dieldrin, endrin, and heptaclor or chemical pollutants such as PCBs are particularly harmful for birds of prey. The residues remain in the environment for many years and are picked up by a variety of animals. The residues then are passed on and concentrated up the food chain with the unfortunate falcons at the top. Ospreys and Bald Eagles have also declined seriously as a result of similar contamination.

Pesticide residues collect in the birds' fat and eventually interfere with the reproductive activity of breeding adults. High residue levels result in abnormal breeding behavior, thin eggshells (that are easily broken), and dead embryos within the egg. Thus, contaminated breeding birds are less able to produce live young.

The problem of pesticide and chemical contamination may still be the major limiting factor on the success of breeding peregrines in Alberta. Although the use of many of the known environmental contaminants is regulated closely in Canada and the United States, this is not the case in Mexico and South America where our peregrines overwinter. In addition, migratory prey species also pick up the residues if they winter in these areas. Consequently the birds eaten



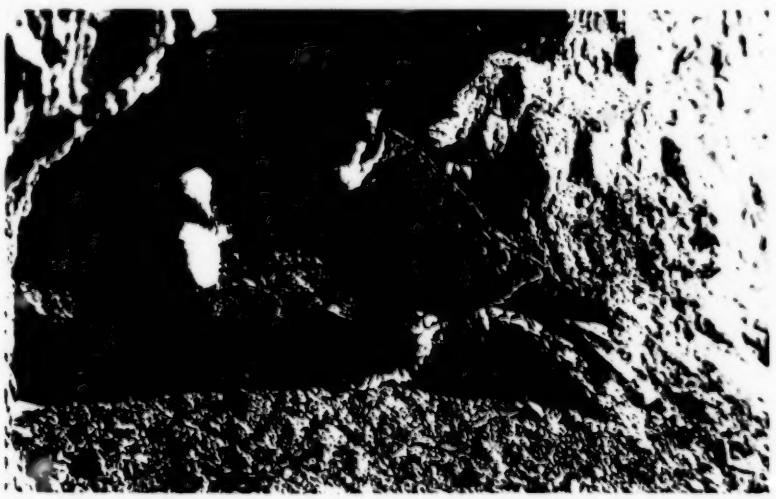
by peregrines in both the winter and summer probably are contaminated.

The success of Peregrine Falcons may be limited by a lack of suitable nesting sites in areas with good food resources. Steep cliffs are not common in northern Alberta and the territorial breeding pairs actively defend the nest sites against all other peregrines. In addition, a successful breeding pair must be able to provide enough food for themselves and their hungry chicks. Some years there may not be enough birds available to feed a larger peregrine population.

Predation may be a problem at some nesting sites. Great Horned Owls can fly onto the ledge and foxes may kill young birds at a nest site that can be reached from the ground. Predation usually occurs at night when older chicks are not protected by the adult birds. In addition, roosting birds of any age may be killed by predators.

Also weather may cause the death of some Peregrine Falcons, particularly eggs and young birds. Violent late spring or summer storms often freeze or break eggs and kill chicks at the nest.

Unfortunately some birds are shot as Peregrine Falcons may be killed legally in their wintering areas (outside of Alberta). In Alberta, a few birds have also been shot by vandals. This is not a major problem for falcons breeding in northern Alberta. Peregrines also are sensitive to human disturbance and may abandon the nest if the disturbance is repeated. **It is illegal to kill or disturb Peregrine Falcons or their nesting areas** in Canada or the United States. A few people continue to rob eggs and chicks from nests or capture adult birds for sale into captivity. However, this is unlikely in Alberta and is illegal throughout Canada.

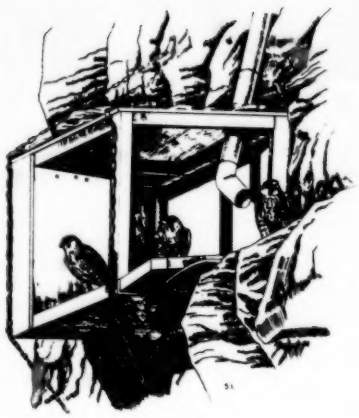


Management and Outlook

Peregrine Falcons are fully protected in Alberta and Canada. Since 1971, the Alberta Fish and Wildlife Division and a variety of agencies have cooperated in a federal and provincial effort to manage Peregrine Falcons. The falcon populations were surveyed regularly and attempts made to locate previously unknown nesting areas. Facilities and techniques for raising, holding, and breeding captive Peregrine Falcons were pioneered by the Canadian Wildlife Service at their raptor breeding facility near Wainwright, Alberta. The eggs or young from these captive birds were placed with wild falcons that had lost their eggs.

"Double clutching" was used successfully with the northern Alberta population from 1974 to 1979. The first set of eggs laid by some females was removed and incubated at the Raptor Breeding Facility at Wainwright. The young were returned later to wild adults, kept for captive breeding stock, or released (hacked) to the wild without adults.

"Fostering" (placing eggs or young with pairs that do not have their own) is used to allow wild Peregrine Falcons to raise a maximum number



Hack Box

of young. Lost eggs or chicks were replaced in order to keep the number of young at four per nest. Fostering has been used with the Alberta population since 1974.

"Hacking" is a release method used when adult pairs are not available to act as foster parents. Falcons, approximately 30 days old are placed in special bird houses or "hack boxes" located on a cliff or a tall building. The hack box protects the young birds from the weather and predators until they are old enough to fly. Food is provided, through a tube, by a hack attendant until, after several weeks, the birds instinctively master flying and hunting. Hack boxes set up in cliffs in central Alberta and in Edmonton have proven to be very effective. In fact, several of the adult peregrines breeding in Calgary and Edmonton were released by this method.

"Dummy Eggs" (artificial eggs) are sometimes used to keep a breeding pair on their territory. These eggs act as insurance by encouraging a female falcon to continue incubating even if her own eggs are lost, broken or eaten by a predator. The dummy eggs are eventually replaced by captive-raised chicks. As long as there is at least one egg or young bird in the nest, the adults will usually defend their territory.

The regulations concerning captive wildlife in Alberta allow people with falconry permits to hold captive-raised Peregrine Falcons in captivity. These birds must be held in specified facilities and cared for by persons who are members of the Alberta Falconry Association. However, because they are endangered, Peregrine Falcons cannot be taken from the wild in Alberta for falconry purposes. Further information is available in the Fish and Wildlife pamphlet "Wildlife in Captivity in Alberta".

The outlook for the worldwide population of Peregrine Falcons is good. However, it differs among different populations. In some areas, the falcons have responded well to the restricted use of pesticides. These populations are increasing and re-establishing in previously-used breeding areas. In particular, peregrines in Britain, Europe, Alaska and the central Yukon are doing exceptionally well.

However, the outlook for the peregrine population in Alberta is not so bright. The earlier decline was stopped but the population has not increased significantly in spite of intense management programs. For unknown reasons we continue to lose most of the young birds before they reach breeding age.

Investigation of the mortality factors affecting all age groups of birds is underway. This includes looking at food availability, nesting site availability, and contamination levels as well as gathering more information about peregrines in the wintering areas.

The Alberta Fish and Wildlife Division will continue to manage Peregrine Falcons in Alberta with the ultimate goal of removing this species from the list of endangered animals. Under a cooperative agreement with Parks Canada, Wood Buffalo National Park, the remnant population of wild birds near Lake Athabasca will be protected and nurtured.

The city nesting Peregrine Falcons are also being cared for and protected. Each year they return to secure nest ledges provided by Alberta Government Telephones buildings in both Edmonton and Calgary. Natural production of young at these sites is enhanced when necessary by fostering capitve-raised chicks from the Canadian Wildlife Service facility at Wainwright.

These urban Peregrines also provide a unique opportunity to provide city residents with information on Peregrine Falcon management and to increase public awareness of the plight of all endangered species. Alberta Government Telephones, in conjunction with the Calgary Zoo, Calgary Parks and Recreation Department and the John Jansen Nature Centre in Edmonton, have created several public information displays. Several of these displays include live television coverage of the Peregrines at their city nest sites.

With intensive management we should be able to maintain the current breeding population in Alberta and, perhaps, increase it to 20 pairs. This will require continued cooperation among various government agencies, non-government and special interest groups, as well as the general public. An international awareness program could help to make these efforts successful.

This is one of a series of information brochures on Alberta's management of threatened wildlife.

For further information on Peregrine Falcons contact your local Alberta Fish and Wildlife Office or write to:

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